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48 H.L. ARORA AND R. W. SPERRY, California Institute of Technology. Studies on color discrimination following optic nerve regeneration in the cichlid fish, *astronotus ocellatus*. (15 min.)

The ability of the completely divided optic nerve to regenerate and to restore accurate direction sense is well established in many fishes and amphibians. The present investigation was undertaken to find out if the perception of color also is restored in normal form by optic nerve regeneration.

By use of jumping technique in which fish were taught to jump out of water to secure food from one of the two differently colored feeders, the fish were trained to distinguish colors. Feeders of two different types were used, one type with painted surfaces and the other employing light transmitted through color filters and through neutral filters of various densities. It is found that these fish distinguish such colors as red, blue, yellow and green from each other and from various shades of gray; also that these color discriminations are learned as easily in fish with regenerated optic nerves; and further that, if the training occurs prior to section of the optic nerve, the originally trained color discriminations are reinstated without further training upon recovery of vision. The results suggest that reconnection of optic axons in the brain is governed by fiber specificities for color as well as by the topical specificities for direction.

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